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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,800	04/25/2007	Gregory David Rigby	9378/207 (FP 23680)	3550

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EXAMINER	
PHASGE, ARUN S	

ART UNIT	PAPER NUMBER
1724	

MAIL DATE	DELIVERY MODE
12/23/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,800	RIGBY ET AL.	
	Examiner	Art Unit	
	Arun S. Phasge	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/13/06, 9/1/06, 5/4/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5, 7-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (Ono), US 2004/0237711 in view of White et al. (White), U.S. Patent 4,045.

The Ono reference discloses a process for electrochemically reducing a metal oxide feed material in a solid state in an electrolytic cell of the type that includes a molten bath of electrolyte, an anode, a cathode, and a means for applying a potential

across the anode and the cathode, which process includes the steps of: (a) applying a potential across the anode and the cathode that is capable of electrochemically reducing metal oxide supplied to the molten electrolyte bath, (b) continuously or semi-continuously supplying the metal oxide feed material into the bath,(c) transporting the metal oxide feed material along a path within the bath and reducing the metal oxide as the feed material moves along the path, (d) continuously or semi-continuously removing at least partially reduced material from the bath (see sections [0046]-[0047]),

The Ono patent further discloses wherein the electrolyte addition in step (e) is on a continuous or a periodic basis (see section [0088]).

The Ono patent further discloses wherein the electrolyte added to the bath in step (e) is in a molten phase or a solid phase (see section [0086]-[0088]).

The Ono patent further teaches wherein the metal oxide feed material is in the form of powders and/or pellets (See section [0038].

The Ono patent teaches wherein the metal oxide is titania and the electrolyte is a CaCl2-based electrolyte that includes CaO as one of the constituents [0086]-[0089]).

The process disclosed in Ono includes maintaining the cell potential above the decomposition potential for CaO (see section [0072])..

Ono discloses an electrolytic cell for electrochemically reducing metal oxide feed material which includes (a) a bath of a molten electrolyte, (b) a cathode, (c) an anode, (d) a means for applying a potential across the anodes and the cathode,

(e) a means for supplying metal oxide feed material to the electrolyte bath, (f) a means for removing at least partially electrochemically reduced metal oxides from the electrolyte bath, (see sections [0046]-[0047]).

The Ono patent further teaches wherein the means for applying a potential across the anodes and the cathode includes (a) a power source and (b) an electrical circuit that electrically interconnects the power source, the anodes, and the cathode (see figure 2).

The Ono reference fails to disclose supplying an amount of electrolyte into the bath that is greater than the amount of electrolyte that is required to compensate for loss of reduced material from the bath and electrolyte removed from the bath with the reduced material, and (f) removing molten electrolyte from the bath to maintain the bath height at a required height or within a range of required heights.

The White patent is cited to show such a modification. The patent shows that the bath is maintained at a desired concentration and bath level to control the rate at which materials are fed to a molten salt bath (see figure 1 and abstract).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ono by the teachings of White.

One having ordinary skill in the art would have been motivated to do this modification, because the White patent teaches the modification to maintain the desired

concentration and bath level by controlling the rate of feeding the materials to the molten bath.

Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono in view of White as applied to claims above, and further in view of Di Pietro, U.S. Patent 2,951,021.

The One and White patents are silent on the purification of the bath that is recycled to the electrolysis cell.

The Di Pietro patent is cited to show such a modification routinely used in the art to purify the electrolyte that is recycled to a titanium molten salt bath (see figure 1).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ono by the teachings of Di Pietro.

One having ordinary skill in the art would have been motivated to do this modification, because the Di Pietro patent teaches the purification of the electrolyte before recycling the electrolyte back to the electrolysis cell.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 7,470,355 in view of White applied as above.

The prior patent fully encompasses the claimed method and apparatus, however, the patent fails to claim supplying an amount of electrolyte into the bath that is greater than the amount of electrolyte that is required to compensate for loss of reduced material from the bath and electrolyte removed from the bath with the reduced material, and (f) removing molten electrolyte from the bath to maintain the bath height at a required height or within a range of required heights.

The White patent is cited to show such a modification. The patent shows that the bath is maintained at a desired concentration and bath level to control the rate at which materials are fed to a molten salt bath (see figure 1 and abstract).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ono by the teachings of White.

One having ordinary skill in the art would have been motivated to do this modification, because the White patent teaches the modification to maintain the desired concentration and bath level by controlling the rate of feeding the materials to the molten bath.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun S. Phasge whose telephone number is (571) 272-1345. The examiner can normally be reached on MONDAY-THURSDAY, 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Arun S. Phasge/
Primary Examiner, Art Unit 1724

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